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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/542,219

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Kazuyoshi Saito

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EXAMINER

KIM, WESLEY LEO

ART UNIT

PAPER NUMBER

2617

MAIL DATE

DELIVERY MODE

10/09/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/542,219	<b>Applicant(s)</b> SAITO ET AL.	
	<b>Examiner</b> WESLEY L. KIM	<b>Art Unit</b> 2617	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 June 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-12 and 14-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3,5-12,14-24,26 and 28 is/are allowed.
- 6) ☒ Claim(s) 25 and 27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/10/09 has been entered.

### ***Response to Amendment***

2. This Office Action is in response to Amendment filed on 6/10/09.
  - Claims 1-2 and 10-11 are currently amended.
  - Claims 4 and 13 are cancelled.
  - Claims 19-28 are newly added.
  - Claims 1-3, 5-12, and 14-28 are pending in the current Office Action.
  - This action is made Non-Final as being the first action after an RCE.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 25-28 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants Admitted Prior Art (10/542219) in view of Coan et al (US 2003/0040342).

**Regarding Claims 25 and 27**, Applicants Admitted Prior Art (AAPA) teaches a wireless packet communication method of transmitting data packets by use of radio channels which are determined to be idle by carrier sense (Col.1:lines 12-15), among more than 3 stations (STAs) in which a plurality of radio channels are available (Page.1:lines 12-16, a plurality of radio channels are available but only one channel can be used together at different times by a plurality of STAs, which can obviously be more than 3 STAs), characterized by comprising: individually managing, for each receiver terminal (Page.5:line 11, respective STAs), a plurality of types of available transmission rates (Page.5:lines 11-13) to be used for transmission of said data packets (Page.5:lines 11-18, the transmission rates of each receiver is managed and appropriate packets are selected for transmission to the respective receiver terminals); when there are a plurality of data packets to be transmitted onto a transmission buffer (Page.5:lines 13-16, there are plurality of data packets selected and stored for transmission, so obviously they are stored in a well known buffer (Page 4:lines 21-24)), referring to packet sizes representative of data amounts of the respective data packets and to transmission rates of the respective data packets associated with receiver terminals (Page.5:lines 11-13, packet size and transmission rates), checking packet time lengths of the respective data packets (Page.5:lines 11-13, packet time lengths), and selecting said plurality of data

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packets whose packet time lengths are approximately equal to each other regardless of their receiver terminals (Page.5:lines 13-16), the packet times lengths being transmission times defined by the packet sizes and transmission rates (Page.5:lines 11-13); and simultaneously commencing the transmissions of said plurality of selected data packets by use of a plurality of radio channels (Page.5:lines 13-16), however the AAPA **does not expressly teach** determining when it is possible to transmit said plurality of data packets simultaneously by use of a plurality of radio channels.

AAPA does teach that it is well known in the art that one radio channel can be determined to be idle prior to transmitting data packets (Page.1:lines 12-24) and the AAPA further teaches that it is known that data packets may be simultaneously transmitted through different radio channels (Page.5:lines 22-25). By the combination of both teachings it is obvious that a skilled artisan would envision determining when it is possible to transmit a plurality of data packets simultaneously by use of a plurality of radio channels (i.e. determining when the plurality of radio channels are idle) so that the plurality of data may be transmitted to the destination without collisions. Therefore, to one of ordinary skill in the art, it would have been obvious to modify AAPA such that a determination is made as to when it is possible to transmit a plurality of data packets simultaneously by use of a plurality of radio channels, to provide a method where the plurality of data may be successfully transmitted to the destination without collisions with on-going transmissions on any of the plural radio channels. However, **AAPA does not expressly teach** switching

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over to transmissions at lower transmission rates when said plurality of data packets whose packet time lengths are approximately equal to each other are selected in association with transmission rates lower than current transmission rate.

Coan teaches that it is a well known concept in the art that a transmission rate (i.e. data rate) can be adjusted based on the type of data being sent (Par.34). Although Coan's teachings are directed towards a handheld device, the well known concept of adjusting transmission rates is applicable in various environments. Therefore it would have been obvious to modify the AAPA with the teachings of Coan, at the time of the invention, such that the transmission time lengths of the selected packets may be kept the same so that an effect of leakage power can be avoided.

***Allowable Subject Matter***

6. Claims 1-3, 5-12, 14-24, 26, and 28 are allowed.
7. The following is an examiner's statement of reasons for allowance:

Applicant's invention is directed towards a plurality of types of available transmission rates to be used for transmission of data packets which are individually managed for each receiver terminal. When there are a plurality of data packets to be transmitted onto a transmission buffer and when it is possible to transmit said plurality of data packets simultaneously, the packet sizes representative of the data amounts of the respective data packets are referred to as well as the transmission rates of the respective data packets associated with the receiver terminals. The packet time lengths (transmission times) defined by the packet sizes and

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transmission rates are checked for the respective data packets. A plurality of data packets whose packet time lengths are approximately equal to each other are selected regardless of their receiver terminals. The transmissions of the plurality of selected data packets are commenced simultaneously by use of a plurality of radio channels.

**Independent Claim 1** recites, *inter alia*, when a first mode and a second mode can be selected, comparing transmission efficiency under said first mode to transmission efficiency under said second mode, and selecting, according to a result of the comparison, a plurality of data packets whose packet time lengths are approximately equal to each other, wherein in the first mode the plurality of data packets whose packet time lengths are equal to each other are generated by dividing a unit of data at a transmission buffer, wherein in the second mode the plurality of data packets whose packet time lengths are substantially equal to each other are generated by adding a dummy signal to at least one of the plurality of data packets whose packet time lengths are different from each other. These steps, in combination of the remaining steps, are neither taught nor suggested by the prior art. Accordingly, Applicants' claims are allowed for these reasons and for the reasons recited in Arguments submitted 11/21/08 and 6/10/09.

**Independent Claim 2** recites, *inter alia*, when a first mode and a second mode can be selected, comparing transmission efficiency under said first mode to transmission efficiency under said second mode, and selecting, according to a result of the comparison, a plurality of data packets whose packet time lengths are

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approximately equal to each other, wherein in the first mode the plurality of data packets whose packet time lengths are equal to each other are generated by dividing a unit of data at a transmission buffer, wherein in the second mode the plurality of data packets whose packet time lengths are substantially equal to each other are generated by adding a dummy signal to at least one of the plurality of data packets whose packet time lengths are different from each other. These steps, in combination of the remaining steps, are neither taught nor suggested by the prior art. Accordingly, Applicants claims are allowed for these reasons and for the reasons recited in Arguments submitted 11/21/08 and 6/10/09.

**Independent Claims 10 and 11** recite, *inter alia*, a unit that sets a first mode and a second mode, the first mode in which a plurality of data packets whose packet time lengths are equal to each other are generated by dividing a unit of data on a transmission buffer, the second mode in which a plurality of data packets whose packet time lengths are substantially equal to each other are generated by adding a dummy signal to at least one of said plurality of data packets whose packet time lengths are different from each other; and a unit that compares transmission efficiency under said first mode to transmission efficiency under said second mode and selects, according to a result of the comparison, one of the modes to generate said plurality of data packets whose packet time lengths are approximately equal to each other. These steps, in combination of the remaining steps, are neither taught nor suggested by the prior art. Accordingly, Applicants claims are allowed for these reasons and for the reasons recited in Arguments submitted 11/21/08 and 6/10/09.



**Independent Claim 19** recites, *inter alia*, detecting a number,  $N_{ch}$ , of idle radio channels and a number,  $N_p$ , of said data packets whose packet time lengths are approximately equal to each other, and simultaneously transmitting  $N_p$  data packets by use of  $N_p$  idle channels without using the MIMO when  $N_{ch}$  is more than  $N_p$ ,  $N_{ch} \geq N_p$ , and simultaneously transmitting a plurality of data packets using the MIMO when  $N_{ch}$  is less than  $N_p$ ,  $N_{ch} < N_p$ . These steps, in combination of the remaining steps, are neither taught nor suggested by the prior art. Accordingly, Applicants' claims are allowed for these reasons and for the reasons recited in Arguments submitted 11/21/08 and 6/10/09.

**Independent Claim 22** recites, *inter alia*, a unit that detects a number,  $N_{ch}$ , of idle radio channels and a number,  $N_p$ , of data packets whose packet time lengths are approximately equal to each other and transmits  $N_p$  data packets simultaneously by use of  $N_p$  idle radio channels without using the MIMO when  $N_{ch}$  is more than  $N_p$ ,  $N_{ch} \geq N_p$ , and that transmits a plurality of data packets simultaneously by use of the MIMO when  $N_{ch}$  is less than  $N_p$ ,  $N_{ch} < N_p$ . These steps, in combination of the remaining steps, are neither taught nor suggested by the prior art. Accordingly, Applicants' claims are allowed for these reasons and for the reasons recited in Arguments submitted 11/21/08 and 6/10/09.

**Independent Claim 26** recites, *inter alia*, determining when the receiver terminals of the data packets transmit acknowledgment packets from the packet time lengths of said data packets and the packet time lengths of acknowledgment packets, wherein the packet time lengths of the acknowledgment packets are

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calculated from the transmission rates of the data packets associated with destinations, and storing, in each of the selected data packets, information of acknowledgment packet transmission time and information of a transmission deferral duration, NAV, wherein the NAV is a period of time taken for completion of transmissions of acknowledgment packets to all of data packets simultaneously transmitted, wherein the acknowledgment packet transmission time indicates when the receiver terminals of the selected data packets are allowed to transmit the acknowledgment packets; and each acknowledgment packet transmission time simultaneously commencing the transmissions of said selected data packets by the MIMO, characterized by further comprising switching over to transmissions at lower transmission rates when said plurality of data packets whose packet time lengths are approximately equal to each other are selected in association with transmission rates lower than a current transmission rate. These steps, in combination of the remaining steps, are neither taught nor suggested by the prior art. Accordingly, Applicants claims are allowed for these reasons and for the reasons recited in Arguments submitted 11/21/08 and 6/10/09.

**Independent Claim 28** recites, *inter alia*, a unit that determines, from the packet time lengths of said data packets and of acknowledgment packets to be calculated from the transmission rates of the data packets associated with destinations, time when the receiver terminals of the data packets transmit acknowledgment packets and stores, in the respective data packets, information on acknowledgment packet transmission time and information on a transmission

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deferral duration, NAV, which is a period of time taken for completion of the transmissions of acknowledgment packets to all of data packets transmitted simultaneously, the acknowledgment packet transmission time being time when the receiver terminals of the respective data packets are allowed to transmit acknowledgment packets; and a unit that simultaneously commences the transmissions of said plurality of selected data packets by the MIMO, characterized by further comprising a unit switching over to transmissions at lower transmission rates when a plurality of data packets whose packet time lengths are approximately equal to each other are selected in association with transmission rates lower than current transmission rates. These steps, in combination of the remaining steps, are neither taught nor suggested by the prior art. Accordingly, Applicants claims are allowed for these reasons and for the reasons recited in Arguments submitted 11/21/08 and 6/10/09.

**Claims 2, 5-9, 12, 14-18, 20-21, and 23-24** are allowed as being dependent upon the allowed Independent Claims.

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to WESLEY L. KIM whose telephone number is (571)272-7867. The examiner can normally be reached on Monday-Friday 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on 571-272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wesley L Kim/  
Examiner, Art Unit 2617